EXISTING EXTERIOR CONDITIONS AND ASSESSMENT REPORT

FOR

BUILDING 2
MAIN BUILDING

CLEMENT J. ZABLOCKI
VA MEDICAL CENTER
MILWAUKEE, WI

November 16, 2012

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November 16, 2012

INTRODUCTION

2012 image (tower discoloration is due to protective netting).

In August of 2012, the Clement Zablocki VA Medical Center in Milwaukee, WI retained a consultant team led by Chequamegon Bay Engineering, with historic architecture consultants Miller Dunwiddie Architecture, Inc. (MDA) and structural engineer consultants Arnold & O'Sheridan (A&O), to evaluate the existing exterior conditions and make recommendations for the Main Building, Building 2, at the Medical Center campus. This report includes a general history and building description, a summary of the team's findings, prioritized architectural and structural recommendations, and opinions of probable costs for the prioritized recommendations.

PHYSICAL DESCRIPTION AND BRIEF HISTORICAL BACKGROUND[1]

Main Building illustration, 1881 souvenir book, VAMC Archives.

Main Building illustration, 1889 National Soldiers' Home book, VAMC Archives.

Construction of the Main Building began in 1869 starting with the "T" shaped A- and B- Wings designed by architect Edward Townsend Mix in the Victorian Gothic style, and there were numerous additions over the years (see Appendix A for Development Plans with associated dates).

The building varies in height from three to four stories with a six-story tower at the main entrance of the A-Wing. It has a textured cut stone foundation laid in a coursed ashlar pattern and multiple wythes of cream-colored brick (Cream City Brick) above. There are numerous and varied decorative wall elements within the brick façade. With some exceptions in the B- and C-Wings, windows are typically one-over-one sash and have either a brick segmented arch or a pointed Gothic arch. The sash are all painted a red color. The north and south sides of the A-Wing show evidence of absent three-story-high porches where there are larger arched infilled brick openings, which perhaps enclosed pairs of double doors. Double hung windows are set within these openings.

The building generally has a tri-color, slate-shingled, mansard roof, with repeating patterns from a zigzag fish

[1] *Plunket Raysich Architects, "Historic Preservation Plan, Volume 1," (2011), 2-4 – 2-5. Halverson, "Northwestern Branch, National Home for Disabled Volunteer Soldiers Historic District," ed. Todd Hunter and Patricia Lynch (2005), 10-11.*

Image shows discoloration of the Cream City brick. Main Building, ca. 1980's, VAMC Archives.

scale to a simple rectangular lap. Some areas of the mansard roof were replaced with asphalt shingles. Gabled dormers are set within the mansard roofed areas. Both the B- and C-Wings have built-up flat roofs.

The main (east) entrance is a modern metal and glass storefront entry system with wood Gothic tracery at the transom. The aluminum entries at the north and south ends of the A-Wing were apparently installed some time during the 1960s and provide access to the lower level. There is also an entrance off a small loading dock on the north side addition.

Based on photographic documentation, it appears that the building was cleaned in the 1970s or 80s, likely by sandblasting. Sandblasting is not a recommended cleaning method for masonry, since it can remove the hardened baked face of the brick leaving a very soft and porous surface that is highly susceptible to freeze-thaw. Fortunately, it does not appear that this has become a serious issue on the building at this time.

SCOPE OF CURRENT WORK

Recently, the roof of B-Wing suffered a major collapse. Following the collapse, the VA initiated a comprehensive repair of the damaged area. SHPO was consulted and all work was reviewed and approved to start in the autumn of 2012. The scope of the current project involves the complete removal of the affected roof in this area of B-Wing, replacing broken historic heavy timber trusses with new matching ones, replacing as needed roof decking in kind, and installing a new roofing system.

ARCHITECTURAL EVALUATION

MASONRY

Surface staining, stone erosion, and mortar joint deterioration.

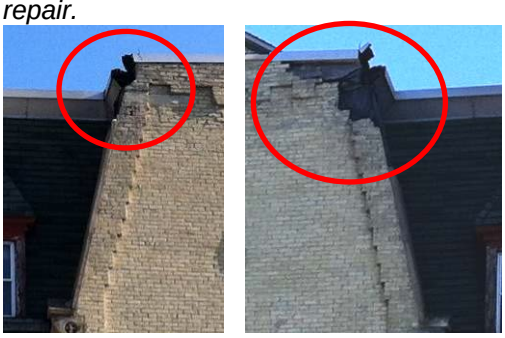
Overall the masonry is in fair to good condition with minor areas of atmospheric dirt and/or biological growth, mortar joint repointing, and brick or stone replacement required.

For masonry areas that require cleaning, it is recommended they be cleaned with the gentlest means possible, starting with a mild detergent and progressing up to a diluted acidic wash. For areas with biological growth, it is recommended that all growth be removed prior to cleaning.

Mortar joint deterioration (north elevation of the B-Wing near west end).

Spalling stone at the main entry on the east elevation.

Cracked stone sill at lower level windows on the east elevation requires repair.



Missing brick and stone cap occurs at both the east and west sides of the mansard-profiled wall at the center of the south elevation of the A-Wing.

Overall, the mortar joints appear to be sound, with the exception of isolated areas requiring repointing. Approximately 10% or less of the whole building exterior shell requires repointing and/or unit replacement, with the exception of the central tower of the A-Wing, which is assumed to require approximately 50-60%. Any replacement materials are to match the original in all aspects; material composition, color, texture, and compressive strengths.

There is stone deterioration around the building including surface degradation and spalling, cracking, and displaced or missing stone. It is recommended that the stone be repaired or replaced as required. It is also recommended that the future use of de-icing salts be restricted from being used adjacent to masonry surfaces. Other areas of surface degradation are likely caused by water run-off. The sources should be determined and corrected prior to masonry restoration.

There are miscellaneous areas of cracked stone, mostly at the window sills around the building. It is recommended that the sills be repaired in-place using stainless steel pins and patched using a masonry-patching product such as a Jahn or Edison Coatings.

Chipped, eroded, and/or spalling brick appear to be isolated to areas where the mortar joints are severely deteriorated. Bricks should be replaced if severely eroded or missing. There are areas of missing brick and stone caps at the tops of the walls at numerous locations. When masonry work proceeds, it is recommended that all of the metal caps be removed and the stone inspected for deterioration, repaired, and/or documented and replaced in kind if needed. Exposing the stone parapets would represent the historical appearance more accurately. Horizontal mortar joints are highly susceptible to weathering, so the installation of metal T-inserts set in a bed of sealant in the horizontal joints on top of the wall would provide additional protection.

There are masonry-lined window wells on the north elevation of the B-Wing with cast-in-place concrete caps. Overall the masonry appears to be in fair condition with the exception of some areas where concrete heaving has occurred.

Masonry retaining wall deterioration at the north side of the B-Wing.

There is a masonry retaining wall at the below-grade lower level entry on the north side of the B-Wing showing severe signs of degradation. It is recommended that adjacent soils have appropriate drainage so as not to hold moisture, thus preventing further freeze/thaw heave. The walls should be rebuilt with stone to match the historical appearance.

Prior to any masonry cleaning and/or repair work, it is important to determine the cause behind the degradation. And it is recommended that all roofing concerns be addressed and repaired prior to proceeding with masonry stabilization.

DECORATIVE METALS

Decorative metals at the main front (east) entry.

There is decorative metal embedded in the masonry around the building's exterior including: metal bases and capitals at masonry pilasters, engaged metal columns between the windows, and decorative metal arch work above the main front (east) entry.

The metal appears to be in fair to poor condition. All rust and scale should be removed from the metal at all locations, repairs are to be made as required, and the metal be refinished to match its historical appearance.

It is unknown how the metal is anchored into the masonry; and while there is no direct evidence of deterioration visible from the exterior at this time, it is recommended that it should be investigated to ensure they remain sound.

ROOFING

Mansard Profiled Roofing and Associated Materials:

Tri-colored slate shingles.

The five towers on the A-Wing and the perimeter of the main building have mansard profiled roofs covered with tri-color decorative patterned slate, with the exception of the northwest corner tower which is a single color. The slate is in poor condition.

The lower portions of the mansard roof of the A-Wing were replaced with green asphalt shingles. These shingles are

Asphalt shingle deterioration at the south elevation is exposing the wood roof decking below.

also in poor condition.

The base of the mansard roofs, the cap of the mansard roofs, and the roofs on the dormers and eyebrows consist of a terne coated metal roof. These roofs are rusted and deteriorated, with sections missing and wood decking exposed.

The ledge along the base of the mansard roofs has been covered with EPDM terminated at the perimeter with termination (term) bars. The term bars are in poor condition and the seams in the EPDM are deteriorated.

Low-Slope Roofing and Associated Building Elements:

Typical poor condition of the low slope roof as seen to the south of the elevator penthouse.

The low-slope roof areas consist of built-up roof systems in extremely poor condition, and the base flashings at the perimeters are in particularly poor condition. It is likely that these materials contain asbestos and should be tested as part of the roof design.

There are many miscellaneous painted metal roof vents that are in fair to poor condition. It is recommended that all of the metal vents that have any rust and scale be removed and repaired and refinished to match the historical appearance.

Roof skylights, or light monitors, on the low-sloped area of the A-Wing. Metal vents are incorporated into the metal framing.

There are metal-framed skylights or monitors that have both translucent glazing and wired translucent glazing. It is unknown if these date from the building's Period of Significance, and that should be determined. If they are to be retained, the glazing compound should be tested for asbestos, and all of the glazing compound should be removed and replaced.

Example of deteriorated counter flashing on the skylight.

The skylights' metal framing appears to be in fair condition, while the metal counter-flashing ranges from poor to fair condition. If the skylights are to be retained when roof work proceeds, it is recommended that all of the flashing be replaced, any scale and rust be removed from the metal framing, the metal repaired as required, and refinished to match the historical appearance. An alternative to repair would be replacement. If units are damaged beyond repair, replacement in a manner consistent with the Secretary of the Interior's Standards could be an option.

Metal Cresting:

Typical metal cresting at towers.

There is decorative metal cresting around the perimeter of all the mansard tower roofs, with the exception of the main entry (east) tower, which was replaced at an unknown date with simple horizontal rails. The cresting appears to be exhibiting similar finish deterioration as the other decorative metal on the exterior. All cresting should be repaired and refinished as required to match the historical appearance.

It is unknown how the cresting is fastened to the roof. As restoration of the exterior proceeds; the cresting anchorage detail should be designed to ensure that it is adequately fastened to the roofing system.

Drainage

Gutters, scuppers and downspouts either drain directly at grade or into a below grade piping system.

All of the drainage for the building is handled by exterior gutters, scuppers, and downspouts. Some downspouts drain directly on the ground a few feet from the building, and others tie into a below-grade piping system. Many of these older below-grade drainage systems were tied into the sanitary water system, which may or may not still be the case. It is recommended that the entire roof drainage system be designed to carry water immediately away from the building. Where drains are underground, they should be tested to make sure they are open, free flowing, not connected to the sanitary sewer system, and not allowing water to enter the building basements.

WOOD (Dormers, Trim, etc.)

There are wood framed and trimmed dormers at the mansard roof areas of the A-Wing. Where the wood remains, the majority appears to be sound, with minor areas that may require repair. There are some areas where wood is missing.

The painted finish appears to have been a red color and has worn away from the majority of the finished wood surfaces. It is recommended that any missing or deteriorated wood be repaired or replaced, and that all of the wood surfaces be refinished to match the historical appearance.

WOOD WINDOWS

Example of paired windows with true divided lites and wood mullion.

All of the original single-glazed, true divided-lite, double-hung, wood windows remain intact within their original openings with non-original aluminum storm windows. It is unknown if there were originally wood storms and screens, and additional research should be conducted to determine if there were and what their profile would have been.

The wood sash, muntins, and trim all appear to be in good condition considering their age. It is recommended that all of the windows be restored and refinished where possible. Glazing compound should be tested for asbestos before replacement.

DOORS AND ALUMINUM STOREFRONT SYSTEMS

Non-historic aluminum storefront system.

There are multiple door types on the building. It is assumed that the wood doors are original, and appear to be in good condition. There are hollow metal doors finished to match the red trim accent color and appear to be in fair to good condition. There are also aluminum door systems.

The aluminum storefront system at the main front (east) entry is not original and is assumed to have been wood originally. It is recommended that additional research be performed to determine the original appearance and to restore it.

The aluminum storefront systems at both the north and south ends of the A-Wing are not character defining historical features. They should be removed and replaced with more energy efficient contemporary systems, the original entrances could be restored, or more historically compatible additions could be considered.

STRUCTURAL EVALUATION

The exterior envelope deficiencies noted above are directly causing the visible interior deterioration seen at the ceilings and floors below. All areas of deterioration should be repaired to prevent further damage to the structure from water infiltration.

See Appendix B for a detailed structural assessment.

PRIORITIZED STABILIZATION RECOMMENDATIONS

It is recommended that work be undertaken in the following order to stabilize the building's exterior and prevent further deterioration. See Appendix D for detailed breakdown of costs.

Immediate Priority: Action within the next 12 months

- **Masonry**
  - Repair/replace all deteriorated and/or missing masonry associated with the roof and coping stone wall caps.
  - Repoint the parapets.
  - Install metal T-inserts at horizontal capstone joints.
- **Roofs**
  - 100% Slate shingle replacement with slate (or simulated slate) shingles.
  - 100% asphalt shingle replacement with slate (or simulated slate) shingles.
  - 100% replacement of the built-up roof systems.
  - 100% replacement of all terne-coated metal.
  - 100% replacement of all metal flashings.
  - Add insulation to increase the thermal performance of the building. Various methods should be studied in order to determine the best solution for each specific location in the building.
- **Wood**
  - Repair any deteriorated wood associated with the roof including: cornices, eaves, soffits, and dormers. Missing wood, or wood beyond repair, is to be replaced to match the existing species and profile. All bare wood is to be treated with a wood preservative and finished to match the historical appearance. Any new wood is also to be back-primed.
- **Windows**
  - Character-Defining Skylights should be repaired as part of the roof work.
  - Non-Character-Defining Skylights could be removed or replaced with units that meet the Secretary of the Interior's Standards.

High Priority: Action within 2 – 3 years

- **Masonry**
  - Remove and replace all masonry elements that are deteriorated beyond repair and / or missing.
  - Repoint deteriorated mortar joints.

- **Decorative Metals**
  - Decorative metals embedded within the masonry should be evaluated to ensure that anchorage details are sound.
  - All metal should have any scale and rust removed and be refinished to match the historical appearance.
- **Wood**
  - Repair any deteriorated wood not associated with the roofs. Missing wood, or wood beyond repair, is to be replaced to match the existing species and profile.
  - All existing bare and new wood should be treated with a wood preservative and finished to match the historical appearance.
- **Windows**
  - Restore all wood windows by repairing any deteriorated wood with consolidants or Dutchmen. Missing wood, or wood deteriorated beyond repair, should be replaced to match the existing species and profile.
  - All wood should be treated with a wood preservative treatment and refinished to match the historical appearance.
  - Missing or broken glazing should be replaced. All glazing compound should be removed and replaced.
  - Windows that are shown to be beyond repair should be reviewed with the architect for consideration of replacement with units to match the original.

Medium to Low Priority: Action within 3 – 5+ years

- **Windows**
  - Additional research should be done to determine if there were storm windows originally, along with their original style(s), profile(s), etc.
  - If storms existed, they could be replicated with wood storm windows to match the historical appearance as closely as can be determined. As an alternative, it is possible that contemporary aluminum storm windows of profile(s) and color(s) that match the original could be used, subject to approval by SHPO/NPS.
  - If it is determined that exterior storm windows never existed, appropriate new interior storm windows could be installed subject to SHPO/NPS approval. It is also possible that exterior storm windows could be used, since the building was constructed at a time when storm windows commonly occurred on such buildings.

- **Doors**
  - Repair and refinish existing wood doors to match the historical appearance.
  - The aluminum doors are not original to the building and could be replaced with wood or a pre-finished hollow-metal or aluminum doors to match the historical appearance.
  - The aluminum storefront systems are not original and are non-character defining elements. Depending on how the building is reused, they could be removed and replaced with more energy efficient contemporary systems, the original entrances could be restored, or more historically compatible additions could be considered.

INTERIM STABILIZATION

There currently are no immediate plans to reuse Building 2. An appropriate approach under the Secretary of the Interior's Standards is to stabilize and mothball the building as outlined in the *National Park Service's Preservation Brief 31, Mothballing Historic Buildings,* until a suitable reuse is determined. (See Appendix C.)

Mothballing temporarily closes a building to protect it from the weather and possible vandalism. Preservation Brief 31 breaks the process down into the following components, and the *italicized* notes indicate the status of each task as it relates to Building 2: **Documentation**

1. Document the architectural and historical significance of the building. *(This has been completed as part of previous studies.)*
2. Prepare a condition assessment of the building. *(Previous reports have done this, and this report contributes additional information.)*

Stabilization

3. Structurally stabilize the building, based on professional condition assessments. *(Work is currently being done to reconstruct the collapsed roofs at the B-Wing.)*
4. Exterminate or control pests, including termites and rodents. *(Measures to be taken in items 5 and 6 should deal with this issue.)*
5. Protect the exterior from moisture penetration. *(Various*

areas where water can get into the building have been noted and should be corrected in a manner consistent with the Secretary of the Interior's Standards, the funds available, and the expected length of mothballing.)

Mothballing

6. Secure the building and its component features to reduce vandalism or break-ins. *(Security fencing has been installed to prevent unauthorized access to the building. Additional appropriate measures should be taken at openings accessible from the ground or adjacent roofs, balconies, etc. to further secure the building.)*
7. Provide adequate ventilation to the interior. *(This has not yet been done and there are various ways this can be accomplished outlined in the Preservation Brief.)*
8. Secure or modify utilities and mechanical systems. *(Mechanical systems are no longer functional at the building. There is some power to the building for lighting.)*
9. Develop and implement a maintenance and monitoring plan for protection. *(VA staff members monitor the building regularly. If there is not a specific schedule of tasks and times as identified in the Preservation Brief, one should be established.)*

LONG-TERM REUSE STUDY

There are a number of ways to study the potential for reuse of an historic building. Three possible approaches for preparing a reuse analysis are as follows:

1. Work with the VA staff to identify potential needs that exist at the medical center site and determine how Building 2 could be used to meet those needs. This would best be done as part of a Master Plan.
2. Engage the signatories and interested parties to the Programmatic Agreement. This would engage more members of the greater community, but not an overall appeal to the greater Milwaukee area.
3. Engage the greater community including the signatories, interested parties, and others (Veterans groups, local government(s), Chambers of Commerce, Convention Bureau, business association(s), developers, general public, etc.) as appropriate. If there is no VA need identified, then using a community-based approach to get

an understanding of the market for other uses may result in success.

In any of the reuse approaches, a market analysis of the most likely income-producing reuse option(s) is a key component. Holding private and confidential interviews (30 to 45 minutes each) with stakeholders and interested parties, allows people to raise issues without the fear of ramifications. A reuse study can fulfill a Section 106 requirement for public outreach. Additional information on reuse studies developed by the Minnesota Historical Society and the University of Wisconsin - Milwaukee Historic Preservation Institute is available online at:
http://www.mnhs.org/shpo/planning/primer.pdf
http://www4.uwm.edu/hpi

The use of historic tax credits can also greatly assist in financing income-producing uses. There are both Federal and Wisconsin historic tax credits available that could help pay for up to 45% of qualifying expenses associated with rehabilitating an historic building. Other collaborations on other VA sites in the US should be explored to see if this may be of interest at Zablocki.

INTRODUCTION

2012 image (tower discoloration is due to protective netting).

In August of 2012, the VA in Milwaukee, WI retained a consultant team led by Chequamegon Bay Engineering, with historic architecture consultants Miller Dunwiddie Architecture, Inc. (MDA) and structural engineer consultants Arnold & O'Sheridan (A&O), to evaluate the existing exterior conditions and make recommendations for the Main Building – Building 2 (specifically Wing A) at the Clement J. Zablocki VA Medical Center in Milwaukee, WI. On August 21, 2012, the team toured the interior spaces that were reachable and the exterior of the building.

This report summarizes the team's findings, which were compiled from observations of existing conditions, information gathered from various sources of records and information gathered from VA staff. It also includes a general history of the building and building description; prioritized architectural and structural recommendations; and opinions of probable costs for the repairs and improvements. The cost estimate was prepared based on the repair recommendations and is attached as Appendix D.

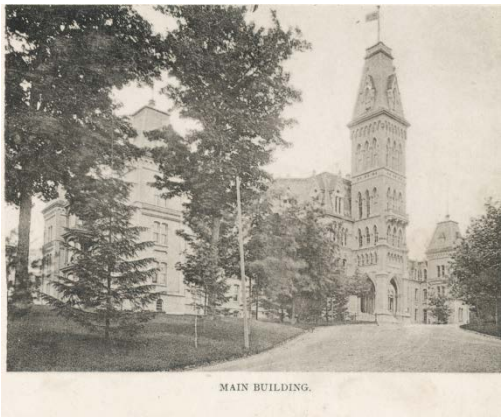
PHYSICAL DESCRIPTION AND BRIEF HISTORICAL BACKGROUND[2]

Main Building illustration, 1881 souvenir book, VAMC Archives.

The Main Building was designed by architect Edward Townsend Mix and construction began in 1869 starting with the "T" shaped A- and B- Wings in the Victorian Gothic style (see Appendix A for Development Plans).

Later additions to the building include the northwest tower on the A-Wing (1875) followed by the other three corner towers and wooden entry porches on the north and south ends of the A-Wing (1876). These additions were also designed by E. Townsend Mix. In 1889 architect Henry C. Koch was retained to design the two level infilled area on the B-Wing along with another wing to the north. In 1937 the Veterans Administration removed and replaced the wing to the north, which is now referred to as the C-Wing, along with the wooden entry porches on the north and south sides of the A-

[2] *Plunket Raysich Architects, "Historic Preservation Plan, Volume 1," (2011), 2-4 – 2-5. Halverson, "Northwestern Branch, National Home for Disabled Volunteer Soldiers Historic District," ed. Todd Hunter and Patricia Lynch (2005), 10-11.*



Main Building illustration, 1889 National Soldiers' Home book, VAMC Archives.

Main Building photogravure, 1894, VAMC Archives.

Main Building, National Soldiers Home, unknown date, VAMC Archives.

Wing. Evidence of the original porches still remains on the exterior. Sometime in the 1960s, the north and south entries were once again removed and replaced with the current aluminum storefront systems.

The Main Building occupies the most prominent place on the site. Located on a high point in the ground elevation, it can be seen from all points on the campus and from the interstate. The location and design was intended to provide major visual impact at the Home.

The building varies in height from three to four stories with a partially exposed lower level at the A-Wing, and one to two stories with a partially exposed lower level on the B- and C-Wings. The top of the "T" forms the main façade, which is oriented to the east, and has a six level central tower over the main entrance.

The building has a textured cut stone foundation laid in a coursed ashlar pattern with flush mortar joints (with the exception of the C-Wing which does not have an exposed stone foundation). The exterior walls above are composed of multiple wythes of cream-colored brick (Cream City Brick). There are decorative wall elements which include recessed brick panels, decorative brick and stone belt courses (many of which also serve as continuous window sills), and brick corbelling above and below windows and at the tower eaves. There are also engaged brick pilasters on the backside (west elevation of the A-Wing and on the B-Wing) without bases or capitals, and engaged brick pilasters on the front (east elevation of the A-Wing) that have painted metal bases and capitals between windows.

Windows are typically one-over-one sash, although they vary in width and height between floors and sections. With the exception of the C-Wing, all of the windows have either a brick segmented arch or a pointed Gothic arch. There are engaged brick pilasters that flank the window groupings along with engaged painted metal columns between windows. The sashes are all painted a red color. The north and south sides of the A-Wing show evidence of a removed porch three stories high where there were larger arched brick openings, which perhaps enclosed pairs of double doors. These openings have been in-filled with Cream City Brick. Double hung windows are set within these openings and are

Image shows discoloration of the Cream City brick. Main Building, ca. 1980's, VAMC Archives.

much smaller than the former openings. The B-Wing has four-over-four sash windows, while the newer C-Wing has modern aluminum windows in sets of two.

The building has a tri-color slate-shingled, mansard roof, and the towers retain their original iron cresting. The shingles have repeating patterns from a zigzag fish scale to a simple rectangular lap. The most noticeable pattern is on the fourth-story roof around the core portion of the building. Other mansard roofing material is composition shingle. Gabled dormers are set in the roof, decorated with Gothic tracery surrounding two tall, narrow, double-hung windows topped with a shorter double-hung window. In the towers, there are single windows rather than sets of two. The north wing has a flat roof.

The main entrance on the east side is currently a modern metal and glass storefront entry system with wood Gothic tracery at the transom. It is assumed that the original exterior doors were once wood and were replaced in the 1960s at the same time the other aluminum systems were erected. The replaced entries at the north and south ends of the A-Wing were installed some time during the 1960s and provide access to the lower level. They are composed of aluminum storefront material with a cream-colored brick base. There is also an entrance off a small loading dock on the north side addition. The dock is open with a simple flat metal canopy. The first floor of the east tower is open on three sides with high, Gothic arches. The steps rise on the fourth side to the main entrance to the building. The piers rest on a base that is made of light-buff, cut stone similar to the foundation walls.

In addition to the remnants of three story porches on the north and south sides of the A-Wing, there are also remnants of balconies at the third floor windows of the tower on the east side along with other locations. It is unknown when they were removed.

Based on photographic documentation, it appears that the building was cleaned in the 1970s or 80s. It is probable that the cleaning method was sandblasting. Sandblasting is not a recommended cleaning method for masonry, especially on softer bricks, such as Cream City brick. Sandblasting not only removes dirt and pollution, it can

remove the hardened baked face of the brick leaving a very soft and porous surface that is highly susceptible to moisture penetration and spalling through freeze-thaw cycles. Fortunately, it does not appear that this has become a serious issue on this building at this time.

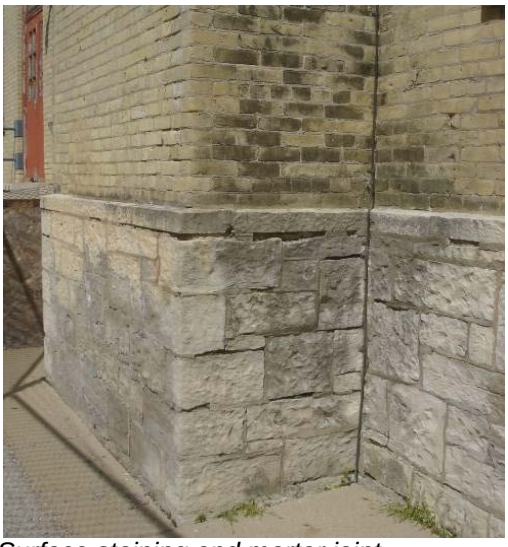
SCOPE OF CURRENT WORK

Collapsed roof area at the B-Wing.

Recently, the roof of B-Wing suffered a major collapse due to the failure of roof framing members. Following the collapse, the VA initiated a comprehensive repair of the damaged area. SHPO was consulted and all work was reviewed and approved to start in the autumn of 2012. The scope of this project involves the complete removal of the affected roof in this area of B-Wing. The historic heavy timber trusses will be replaced with trusses in the same configuration as the original framing. The roof decking will also be replaced in kind and a new roofing system will be installed.

ARCHITECTURAL EVALUATION

MASONRY



Surface staining and mortar joint deterioration of stone and brick joints at an inside corner of the B-wing. There is also minor stone edge erosion where mortar has deteriorated.

Biological growth at brick corbelling.

Mortar joint deterioration (north elevation of the B-Wing near west end).

Overall the masonry is in fair to good condition with minor areas of atmospheric dirt and/or biological growth, mortar joint repointing, and brick or stone replacement required.

For masonry areas that require cleaning, it is recommended to be cleaned with the gentlest means possible, starting with a mild detergent and progressing up to a diluted acidic wash such as PROSOCO's Sure Klean Restoration Cleaner. Based on the assumed softness of the masonry, very low water pressures (less than 150 psf) should be used and other abrasive means such as sandblasting should never be used on masonry. For areas with biological growth, it is recommended that all growth be removed from the masonry surface. Any vines or roots will penetrate the soft brick faces and will cause damage to the brick surfaces.

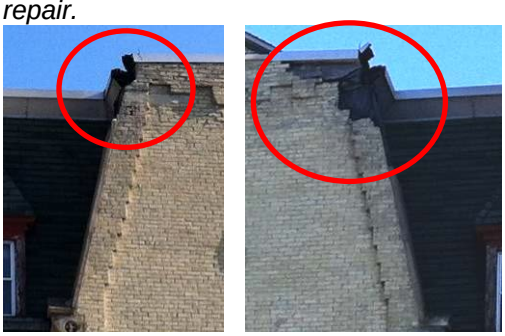
Overall, the mortar joints appear to be sound, with the exception of isolated areas requiring repointing. Typically, the edges of the mortar joint should be flush with the face of the brick with the mid-portion being slightly concave. This will prevent a brick ledge on which moisture can collect. The darkness seen between bricks and shadows that the bricks are casting on the joint lines indicate that the joints are recessed and in need of re-pointing. Deterioration of mortar joints can be caused by several factors, including moisture infiltration, weathering over time, building movement, and improperly tooled joints. Mortar joints can also be damaged by sandblasting. It is difficult to pinpoint the exact cause or causes of joint deterioration at Building 2, but it is likely that these are all contributing factors.

Currently it appears that approximately 10% or less of the whole building exterior shell requires repointing and/or unit replacement, with the exception of the central tower on the east elevation of the A-Wing. The tower is currently covered with a netting material assumedly to protect passersby from falling masonry debris. It appears that approximately 50-60% of the tower surface will require repointing and/or unit replacement. It is recommended that the brick and mortar be tested for its material properties and compressive strengths. Any replacement materials are to match the original in all aspects; material composition, color, texture, and

Spalling stone at the main entry on the east elevation.

Spalling stone at the north side of the main entry stairs on the east elevation.

Cracked stone sill at lower level windows on the east elevation requires repair.



Missing brick and stone cap occurs at both the east and west sides of the mansard-profiled wall at the center of the south elevation of the A-Wing.

compressive strengths.

There is stone deterioration around the building including surface degradation and spalling, cracking, and displaced or missing stone. Example areas of surface degradation are found at the east (front) elevation entry stairs. This damage is most likely caused by the use of de-icing salts. It is recommended that the stone be repaired or replaced as required. It is also recommended that the future use of de-icing salts be restricted from being used adjacent to masonry surfaces that are highly susceptible to deterioration. Other areas of surface degradation are likely caused by water run-off. The source should be determined and corrected prior to masonry restoration.

Chipped, eroded, and / or spalling brick seems to be isolated to areas where the mortar joints are severely deteriorated. Bricks should be replaced if severely eroded or missing.

There are miscellaneous areas of cracked stone, mostly at the window sills around the building. Due to their size and potential difficulty to remove and replace them, it is recommended that the sills be repaired in-place using stainless steel pins and patched using a masonry-patching product such as a Jahn or Edison Coatings. It is recommended that the selected contractor to perform the masonry restoration have a minimum of at least five years' experience performing this type of work and provide examples of similar projects.

There are areas of missing brick and stone caps at the tops of the walls at numerous locations. Most notable is the degradation at the upper corners of the mansard profiled walls in the center of the south and north elevations of the A-Wing. A common cause for deterioration at the top of masonry walls is the failure of horizontal joints. This then allows moisture to enter the top of the wall and cause damage through freeze/thaw action. The masonry parapets at the roof have also been covered with metal, which may have been a solution to covering deteriorated joints and masonry. When masonry work proceeds, it is recommended that all of the metal caps be removed and the stone inspected for deterioration, repaired, and/or documented and replaced in kind if needed. Exposing the stone parapets would represent the historical appearance more accurately. Due to horizontal mortar joints being highly susceptible to

Masonry lined window wells at the north side of the B-Wing.

Masonry retaining wall deterioration at the north side of the B-Wing.

Infilled masonry openings at the south elevation of the A-Wing.

weathering, the installation of metal T-inserts set in a bed of sealant in the horizontal joints on top of the wall would provide additional protection.

There are masonry lined window wells on the north elevation of the B-Wing with cast-in-place concrete caps. Overall the masonry appears to be in fair condition with the exception of some areas where concrete heaving has occurred.

There is a masonry retaining wall at the below-grade lower level entry on the north side of the B-Wing. The wall is built with stone that is showing severe signs of degradation. It is likely that the cause of damage is due to the adjacent soils and the stone itself, which are holding moisture and subject to freeze/thaw action and heaving. It is recommended that adjacent soils have appropriate drainage so as not to hold moisture. This would help prevent further freeze/thaw heave. The walls should be rebuilt with stone to match the historical appearance.

Prior to any masonry cleaning and/or repair work, it is important to determine the cause behind the degradation. In most cases the apparent damage is caused by moisture and freeze/thaw action. At areas with surface staining and joint erosion, the cause appears to be the result of roof degradation and/or insufficient roof drainage. It is recommended that all roofing concerns be addressed and repaired prior to proceeding with masonry stabilization so as to prevent further or repeating deterioration.

There are large infilled masonry areas on both the north and south sides of the A-Wing. It is assumed that these were previous openings onto the exterior porches that are visible in some of the historic images. Depending on the potential reuse of the building, and the VA's desire, restoring this to their original historic appearance could be explored.

DECORATIVE METALS

Decorative metals at the main front (east) entry.

Rust blooming at metal pilaster base and staining stone below.

There is decorative metal embedded in the masonry around the building's exterior including: metal bases and capitals at masonry pilasters, engaged metal columns between the windows, and decorative metal arch work above the main front (east) entry.

The metal appears to be in fair to poor condition with areas of failing paint finish and signs of rusting. The metalwork has either a painted green or red finish, and where rust has bloomed is has washed down the surface of the building and is staining the masonry below.

It is unknown how the metal is anchored into the masonry; however, the differing materials will expand and contract at different rates. While there is no direct evidence of deterioration visible from the exterior at this time, it is possible that anchorage details could be affected by this and should be investigated to ensure they remain sound.

Based on the amount of rust visible, it is recommended that all of the rust and scale be removed from the metal at all locations, repairs are to be made as required, and the metal be refinished to match its historical appearance.

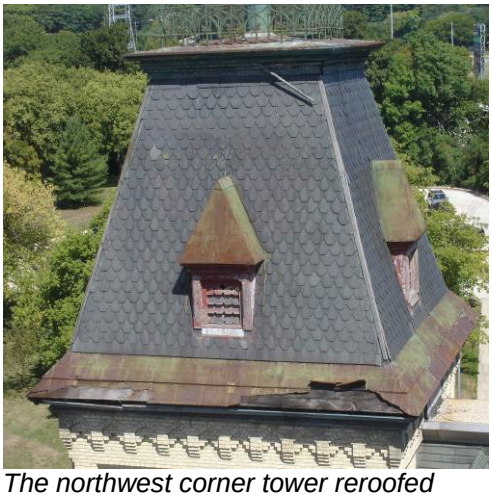
ROOFING

Mansard Profiled Roofing and Associated Materials:

Tri-colored slate shingles on the mansard roof. The slate has been replaced with green colored asphalt shingles on the left side of the image above.

The corner towers of the A-Wing, main front (east) entry tower, and the perimeter of the main building have mansard profiled roofs. These mansard-style roof areas are covered with tri-color decorative patterned slate with bands of square butt-end slate and bands of gothic style butt-end slate. The northwest corner tower has been likely re-roofed with a single color gothic butt end slate. The slate in all areas is in poor condition with many missing and loose pieces.

Some of the slate has been replaced with green asphalt shingles. This occurs at some of the mansard areas around the perimeter of the lower roofs of the A-Wing, along with the dormer roofs in these locations. These shingles are also in poor condition with several areas of missing shingles.

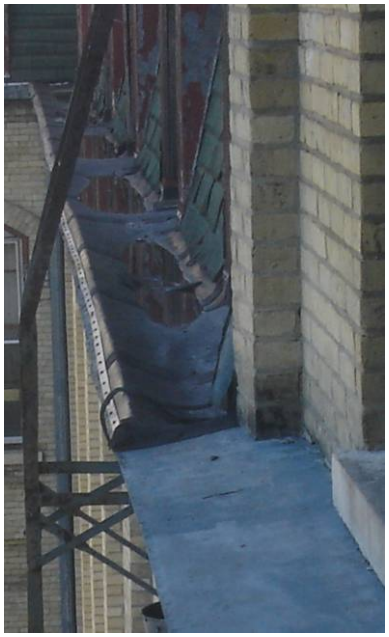


The northwest corner tower reroofed with a single color with finish failure of the terne coated metal and significant deterioration of the metal at the base.

Asphalt shingle deterioration at the south elevation is exposing the wood roof decking below.

The base of the mansard roofs, the cap of the mansard roofs, and the roofs on the dormers and eyebrows consist of a terne coated metal roof. These roofs are rusted and deteriorated, with sections missing and wood decking exposed.

Along the base of the mansard roofs where there is little or no positive slope to the ledge below, the top surface has been covered with EPDM terminated at the perimeter with termination (term) bars. The term bars are not in good condition and the seams in the EPDM are deteriorated. This ledge at the base of the roof transitions to a painted metal sill where very little of the paint finish remains and building debris is collecting.



EPDM at the base of the mansard roof transitions to a painted metal sill.

Example of typical degradation of the terne metal shingle roofs above the dormers.

Deteriorated paint finish at the metal sill and collecting building debris.

Low-Slope Roofing and Associated Building Elements and Materials:

Low slope roof to the south of the elevator penthouse.

The low-slope roof areas consist of built-up roof systems. These roofs are in extremely poor condition and have surpassed their intended life expectancies. There are areas where “blisters” have formed and the built-up membrane is no longer sufficiently adhered to the roof deck. There is also visible degradation of the membrane at the roof perimeter where the aggregate surfacing has been redistributed by weathering.

Typical poor condition of the rubber/tar membrane at the roof perimeter.

Roof skylights, or light monitors, on the low-sloped area of the A-Wing. Metal vents are incorporated into the metal framing.

Example of deteriorated counter flashing on the skylight.

Base flashings at the roof perimeters are in particularly poor condition. Repairs to these flashings could only be expected to be very short-term repairs. Much of the base flashing and/or the aluminum coating present on the base flashing visually appears to contain asbestos. These materials should be tested as part of the roof design.

There are many miscellaneous painted metal roof vents on this building in fair to poor condition. Most, if not all, have a failing finish and rust blooms. It is recommended that all of the metal vents have any rust and scale removed and be repaired and refinished to match the historical appearance.

There are metal framed skylights or monitors on the low-sloped roof of the A- and C-Wings. The skylights have both translucent glazing and wired translucent glazing. The glazing is in fair condition with a few broken panes of glass. The glazing compound should also be evaluated for weather tightness and tested for possible asbestos. To increase the longevity and enhance thermal performance of the skylights, all of the glazing compound should be removed and replaced.

The metal framing appears to be in fair condition with areas of rust where there is paint degradation. The metal counter flashing on the skylights ranges from poor to fair condition with some areas showing significant signs of deterioration and rust. When roof work proceeds, it is recommended that all of the flashing be replaced, any scale and rust be removed from the metal framing, the metal repaired as required, and refinished to match the historical appearance.

An alternative to repairing the skylights as noted above would be to replace them. Each skylight would be reviewed to determine whether it is a contributing element to the building's historic character. If so, each would then need to be inspected for condition; and, if damaged beyond repair, replaced in a manner consistent with the Secretary of the Interior's Standards.

Metal Cresting:

Typical metal cresting at towers.

Metal rail at the perimeter of the main front (east) entry tower.

There is decorative metal cresting around the perimeter at the top of all the mansard tower roofs, with the exception of the main entry (east) tower which was likely replaced at an unknown date. The main tower has simple metal rails; however, based on historic images it appears a more decorative element was once present. As restoration of the building proceeds, it is recommended that additional research be performed to replicate what the cresting at the main tower was in order to match its historical appearance.

The metal cresting at the roofs was visually evaluated from a distance and appears to be exhibiting similar finish deterioration as the other decorative metal on the exterior. All cresting should be repaired and refinished as required to match the historical appearance. It is also unknown how the cresting is fastened to the roof. Based on another building at the site that has a similar cresting detail (Building 6 – the original hospital building), the cresting was set atop wood 2xs that were not securely fastened to the roof structure and are floating above the roofing membrane. As restoration of the exterior proceeds, the cresting anchorage detail should be designed to ensure that it is adequately fastened to the roofing system.

Drainage

Gutters, scuppers and downspouts either drain directly at grade or into a below grade piping system.

All of the drainage for the building is handled by exterior gutters, scuppers, and downspouts. There do not appear to be any interior drains. Some of the downspouts drain directly on the ground a few feet from the building, and there are several others that tie into a below-grade piping system. Many of these older below-grade drainage systems were tied into the sanitary water system, which may or may not still be the case here. We recommend that the entire roof drainage system be designed to carry water immediately away from the building. Where drains are underground, they should be tested to make sure they are open, free flowing, not connected to the sanitary sewer system, and not allowing water to enter the building basements.

WOOD (Dormers, Trim, etc.)

Visible paint deterioration and missing wood trim elements at dormers.

There are many wood framed and trimmed dormers with terne coat metal or replacement asphalt-shingled roofs at the mansard roof areas of the A-Wing. There are a variety of penetration types and configurations ranging from squared louvers to squared window pairings to single gothic arch-topped windows. The condition of the majority of the dormers was evaluated by viewing from the ground, with a few accessible from low-sloped roof areas. Where the wood remains, it appears to be sound, with minor areas that may require repair with either wood consolidants or Dutchmen. There are some areas where wood is missing; and based on the condition of the majority of the wood, it is likely that the fasteners failed and pieces were removed by severe weather.

The painted finish appears to have been a red color and has worn away from the majority of the finished wood surfaces. It is recommended that any missing or deteriorated wood be repaired or replaced and that all of the wood surfaces be refinished to match the historical appearance. Prior to priming and repainting, it is recommended that all bare wood be treated first with a wood preservative and all new wood be treated and back-primed.

WOOD WINDOWS

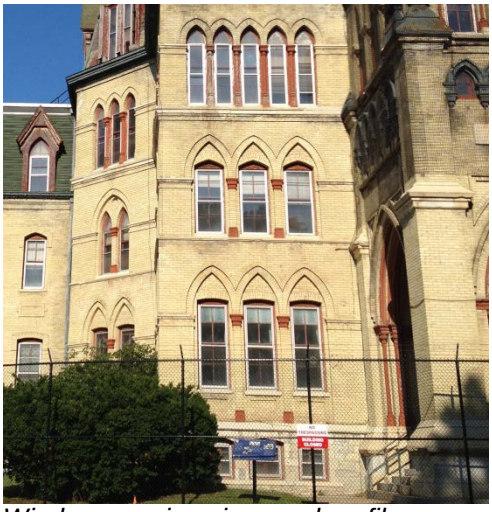
Paired windows with true divided lites and wood mullion are present on the B- and C-Wings.

It appears that all of the original single-glazed, true divided-lite, double-hung, wood windows remain intact within their original openings. There are a variety of profiles around the building, ranging from squared-within-squared openings, squared-within-round-arch openings, and pointed-gothic-arch openings. Squared aluminum storm windows were also installed at an unknown date and are not original to the building.

The wood sash, muntins and trim all appear to be in good condition considering their age. There is minor to moderate wood degradation evident at isolated areas such as sills, where moisture may not be shed quickly. The protective paint finish has worn away from the majority of all of the wood surfaces, and it is recommended that all of the windows be restored. Further investigation is required to determine how the glazing is set within the sash. Based on the age of the windows, it is possible that there is a wood stop; however, it is also possible that glazing compound was used

Windows within the entry tower are set 4 to 6 inches above the interior finished terrazzo floor. There are also remnants of draft guards present at the window stools.

Windows on the C-Wing with aluminum storms and mullions.



Window opening sizes and profiles vary on the east elevation of the A-Wing.

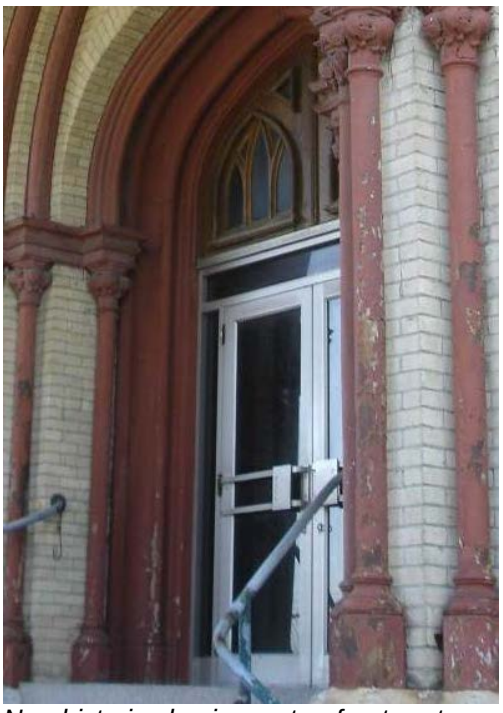
instead. If there is glazing compound, it should be tested for asbestos and all replaced to provide enhanced thermal performance.

It is unknown if there were historically storm windows on this building and it is unclear from the historic photos. Storm windows are important in that they not only provide increased thermal performance of the opening, but also offer additional protection from weathering to the windows. Additional research should be conducted to determine if there were originally exterior storm windows and what their original style(s), profile(s), etc. They could then be replicated with wood storm windows to match the historical appearance as closely as can be determined. However, since any original storm windows do not appear to be remaining, it is possible that contemporary aluminum storm windows of profile(s) and color(s) that match the original could be used, subject to approval by SHPO/NPS.

In the unlikely event it is determined that exterior storm windows never existed, appropriate new interior storm windows could be installed subject to SHPO/NPS approval. It is also possible that exterior storm windows could be used, since the building was constructed at a time when storm windows commonly occurred on such buildings.

A good window restoration would include the replacement of weather stripping and glazing compound, along with the installation of quality wood storm windows. With such a program, the thermal performance of the existing windows could equal, and possibly exceed, the performance of contemporary double-glazed replacement windows while retaining historic materials and profiles.

DOORS AND ALUMINUM STOREFRONT SYSTEMS



Non-historic aluminum storefront system. The original wood tracery remains in the transom window above.

Entry vestibule addition on the south elevation of the A-Wing.

Original wood door and transom with an aluminum storm window above.

There is a variety of door types on the different wings of this building, ranging from wood to aluminum to painted hollow metal. It is assumed that the wood doors are original, based on the remaining paint color and the divided lite patterns matching the transom windows above. The wood appears to be in good condition, and may only need minor repair using wood consolidants or Dutchmen.

The hollow metal doors present on the south side of the B-Wing are finished to match the red trim accent color present around the building's exterior. The doors appear to be in fair to good condition.

There is an aluminum storefront system at the main front (east) entry of the A-Wing. This system is not original to the building, and it is unknown when it was installed. It was, however, likely installed about the same time that the aluminum storm windows were installed. Based on the remaining wood transom window above, these were most likely solid wood double doors originally. As the restoration of the building progresses, it is recommended that additional research be performed to ensure that the replacement system matches the original appearance.

There are aluminum storefront systems with brick bases that are not original to the building at both the north and south ends of the A-Wing. These are not character defining historical features. It is unknown when these additions were added; however, it is assumed to be within the past 20 to 30 years. They appear to be in fair condition; however, it is unknown if the systems are thermally broken. Since the additions are non-character defining historical elements, they could be removed and replaced with more energy efficient contemporary systems; or the original entries could be restored.

STRUCTURAL EVALUATION SUMMARY

The exterior envelope deficiencies noted in this assessment, most notably at the roofs, are directly causing the visible interior deterioration seen at the ceilings and floors below. Deteriorated roofing materials and flashings at the A-Wing are generally at locations where the roof and floor joists are parallel to the adjacent masonry walls and do not bear into them. This differs from the areas of roof failure at the B-Wing where the roof framing members bear directly on the masonry wall. All areas of deterioration must be repaired to prevent further damage to the structure from water infiltration.

See Appendix B for the detailed structural assessment prepared by Arnold & O'Sheridan.

PRIORITIZED STABILIZATION RECOMMENDATIONS

In surveying the exterior conditions of Building 2, the project team recommends that work be undertaken in the following order to stabilize the building's exterior and prevent further deterioration. See Appendix D for associated detailed breakdown of costs.

Immediate Priority: Action within the next 12 months

- **Masonry**

Masonry Associated with Roofs
Repair / replace all deteriorated and / or missing masonry associated with the roof and coping stone wall caps.

Repointing at Parapets
Approximately 700 square feet

Metal T-inserts at Horizontal Cap Stone Joints
Approximately 250 lineal feet

- **Roofs**

All roofing elements have exceeded their useful life expectancies.

Slate Shingle Replacement
100% removal and replacement at all mansard roofs.
Approximately 83 squares.

Asphalt Shingle Replacement
The current asphalt shingles on the mansard roofs areas are not original to the building. 100% removal and replacement with slate (or simulated slate) is recommended to match the historical appearance.
Approximately 32 squares.

Built-up Roof Replacement
100% removal and replacement.
Approximately 350 squares.

Terne Coated Metal Replacement
100% removal and replacement with painted or pre-finished metal shingles.
Approximately 35 squares.

Flashing Replacement
100% removal and replacement of metal flashing at all roofs.

Insulation
To increase the thermal efficiency of the building, insulating the roof with batt, spray foam or blown-in insulation, should be considered. It is recommended to perform the work at the same time as other roofing work commences. Spray foam insulation was used for pricing in the estimate included.
Approximately 11,500 SF at the slate areas.
Approximately 35,000 SF at the built-up roof areas.
Approximately 3,500 SF at the terne metal areas.

- **Wood**

Wood Associated with Roofs
Repair any deteriorated wood associated with the roof including: cornices, eaves, soffits, and dormers. Missing wood, or wood beyond repair, is to be replaced to match the existing species and profile. All bare wood is to be treated with a wood preservative and finished to match the historical appearance. Any new wood is also to be back-primed.

Wood Refinishing
Approximately 5500 lineal feet.

Wood Repair
Approximately 2600 lineal feet.

- **Windows**

Skylights
For Character-Defining Skylights: Repair any deteriorated skylight framing, replace any broken glazing and all glazing compound, and replace the flashing around all skylights.
For Non-Character-Defining Skylights: Replace with units that meet the Secretary of the Interior's Standards.
Approximately 10 skylights total.

High Priority: Action within 2 – 3 years

- **Masonry**

Masonry Replacement
Remove and replace all masonry elements that are deteriorated beyond repair and / or missing.
Approximately 5% of the entire building envelope (excluding the main east tower) = 2500 square feet.
Approximately 30% at the main tower = 1500 square feet.

Repointing
Repoint deteriorated mortar joints.
Approximately 10% of the entire building envelope (excluding the main east tower) = 5000 square feet.
Approximately 50% at the main tower = 2500 square feet.

- **Decorative Metals**

  Repair / Refinish Decorative Metals
  Decorative metals embedded within the masonry should be evaluated to ensure that anchorage details are sound. All metal shall have any scale and rust removed and be refinished to match the historical appearance.
  Approximately 1000 SF.

- **Wood**

  Wood Repair / Refinishing
  Repair any deteriorated wood not associated with the roofs. Missing wood, or wood beyond repair, is to be replaced to match the existing species and profile. All bare wood is to be treated with a wood preservative and finished to match the historical appearance. Any new wood is also to be back-primed.

- **Windows**

  Wood Window Restoration
  Restore all wood windows by repairing any deteriorated wood with consolidants or Dutchmen. Missing wood, or wood deteriorated beyond repair, is to be replaced to match the existing species and profile. All wood is to be treated with a wood preservative treatment and refinished to match the historical appearance. Any missing or broken glazing is to be replaced. All glazing compound is to be removed and replaced. Windows that can be shown to be beyond repair shall be reviewed with the architect for consideration of replacement with units to match the original.

Medium to Low Priority: Action within 3 – 5+ years

- **Windows**

  Wood Storm Windows
  New wood storms could be installed to increase the thermal performance of the existing wood windows. Additional research should be done to determine if there were originally exterior storm windows, along with their original style(s), profile(s), etc. They could then be replicated with wood storm windows to match the historical appearance as closely as can be determined. However, since it does not appear that any original storm windows remain, it is possible that contemporary aluminum storm windows of profile(s) and color(s) that match the original could be used, subject to approval by SHPO/NPS.

  In the unlikely event it is determined that exterior storm windows never existed, appropriate new interior storm windows could be installed subject to SHPO/NPS approval. It is also possible that exterior storm windows could be used,

since the building was constructed at a time when storm windows commonly occurred on such buildings.

- **Doors**

Wood Doors

The existing wood doors are in fair condition. They should be repaired and refinished to match the historical appearance.

Aluminum Doors

The aluminum doors and storefront systems are not original to the building. To return the entries back to their original appearance, the doors could be replaced with wood or a pre-finished hollow-metal or aluminum doors to match the historical appearance.

Storefront Systems

The north and south storefront system additions on the A-Wing are not original to the building and are non-character defining elements. Depending on how the building is reused, they could be removed and replaced with more energy efficient contemporary systems, the original entrances could be restored, or more historically compatible additions could be considered.

INTERIM STABILIZATION

There currently are no immediate plans to reuse Building 2; therefore an appropriate approach under the Secretary of the Interior's Standards would be to stabilize and mothball the building. This brief narrative is a condensed version of the *National Park Service's Preservation Brief 31, Mothballing Historic Buildings,* which is available online at the link below and is also attached in Appendix C. (http://www.nps.gov/history/hps/tps/briefs/brief31.htm)

Mothballing is the act of closing up a building temporarily to protect it from the weather, as well as to secure it from vandalism. It can be short-term—a few months or years, or long term—five to ten years or longer. The level and intensity of stabilization and mothballing at Building 2 will be determined by how long it is expected to take before the building is again in use.

Preservation Brief 31 breaks the process down into the following components, and the *italicized* notes indicate the status of each task as it relates to Building 2:

Documentation

1. Document the architectural and historical significance of the building. *(This has been completed as part of previous studies.)*
2. Prepare a condition assessment of the building. *(Previous reports have done this, and this report will contribute additional information.)*

Stabilization

3. Structurally stabilize the building, based on a professional condition assessment. *(Work is currently being done to reconstruct the collapsed roofs at the B-Wing of Building 2.)*
4. Exterminate or control pests, including termites and rodents. *(Termites are not an issue in Milwaukee. There was no evidence of rodents in the building, but some evidence of past intrusion by raccoons, squirrels, etc. was noted. Additional measures to be taken in items 5 and 6 should deal with this issue.)*
5. Protect the exterior from moisture penetration. *(Various areas where water can get into the building have been noted and should be corrected in a manner consistent with the Secretary of the Interior's Standards, the funds available, and the expected length of mothballing. For example, re-roofing to original conditions, if funds are available, would be preferred to temporary roofing. However, temporary roofing is better than leaving the interior exposed to weather.)*

Mothballing

6. Secure the building and its component features to reduce vandalism or break-ins. *(Security fencing has been installed to prevent unauthorized access to the building. Additional appropriate measures should be taken at openings accessible from the ground or adjacent roofs, balconies, etc. to further secure the building. Such measures could include plywood covers over windows, more secure temporary doors; alarm systems, if power is available; infilling particularly vulnerable openings with masonry; etc.)*
7. Provide adequate ventilation to the interior. *(This has not yet been done. It is important to provide adequate ventilation to reduce the chance of mold growth. There are various appropriate ways this can be accomplished outlined in the Preservation Brief.)*
8. Secure or modify utilities and mechanical systems. *(Mechanical systems are no longer functional at the building. There is some power to the building for lighting.)*
9. Develop and implement a maintenance and monitoring plan for protection. *(VA staff members monitor the building regularly. If there is not a specific schedule of tasks and times as identified in the Preservation Brief, one should be established.)*

(See Appendix C for Preservation Brief 31 for additional information.)

LONG-TERM REUSE STUDY

There are a number of ways to study the potential for reuse of an historic building. For Building 2 at the Zablocki VA Medical Center, there could be three different approaches for preparing a reuse analysis, as follows:

1. The first would be limited to simply working with the VA staff to identify potential needs that exist at the medical center site and determining how Building 2 could be used to meet those needs. This would best be done as part of a Master Plan for the complex, so that all the forces in play that can be identified and that have space implications are recognized, and all existing buildings, including Building 2, can be examined for how they can best be utilized to meet those space needs.
2. Building 2 may present a greater challenge for reuse by the VA, so an alternative reuse analysis that engages the signatories and the interested parties to the Programmatic Agreement may be appropriate. This would engage some members of the greater community that would be represented by those parties, but would not be an overall appeal to the greater Milwaukee area.
3. The last approach would be to engage the greater community in the reuse study effort. This would involve the signatories, interested parties, and others (Veterans groups, local government(s), Chambers of Commerce, Convention Bureau, business association(s), developers, general public, etc.) as appropriate. This could be considered for Building 2 since it is a very large building that may not be able to meet any needs identified by VA staff. If, because of its size, distance from the main hospital, or other factors, there is no VA need identified, then using a community-based approach may help find an appropriate reuse. In this case, getting an understanding of the market in the greater Milwaukee area for hotels, offices, housing, or other potential uses may result in success. In any of the reuse approaches, a market analysis of the most likely income-producing reuse option(s) is a key component.

Another aspect that has been successful in past reuse study efforts is to hold interviews (30 to 45 minutes each) with stakeholders and interested parties that are private and confidential. This allows people to raise issues without the fear of backlash or ramifications. In a greater public engagement process, with a large building or site, between 30 and 50 individuals may be interviewed during the course of the study. Because of this, and depending on how it is otherwise structured, a reuse study can fulfill a Section 106 requirement for public outreach.

Additional information regarding a reuse study process that was developed by the Minnesota Historical Society and has been used successfully for many years is available online at http://www.mnhs.org/shpo/planning/primer.pdf. The University of Wisconsin, Milwaukee also has a Historic Preservation Institute that can assist in a reuse study process. A web link to that site is http://www4.uwm.edu/hpi.

Another important aspect of finding a reuse for an historic building is the potential use of historic tax credits to assist in financing income-producing uses. The VA may not want to have outside users on the campus, but it may be the best way to find a reuse for buildings; and, depending on how a deal is structured, it may also be a way to provide income to the medical center. There are both Federal and Wisconsin historic tax credits available that could help pay for up to 45% of qualifying expenses associated with the effort to convert an historic building to an appropriate reuse. Other collaborations on other VA sites in the US should be explored to see if this may be of interest at Zablocki.

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Souvenir of the National Home for Disabled Volunteer Soldiers, Northwestern Branch, Milwaukee, Wisconsin. N.p., 1881.

Appendix A:
HABS Drawings – Main Building Plan Development

MAIN BUILDING

NATIONAL HOME FOR DISABLED VOLUNTEER SOLDIERS

(BUILDING No. 2 • CLEMENT J. ZABLOCKI VETERANS AFFAIRS MEDICAL CENTER)

VIEW OF THE MAIN BUILDING, LOOKING NORTHWEST (CIRCA 1895) — LIBRARY COLLECTIONS, CLEMENT J. ZABLOCKI VETERANS AFFAIRS MEDICAL CENTER

The Milwaukee Ladies Association was established in 1861 by a group of prominent Milwaukee women to provide relief for Civil War soldiers. By 1865 the organization was furnishing meals, lodging, and medical care to veterans in need, and had raised $100,000 for the construction of a building to house the Association's activities. That same year Congress established the National Asylum (later Home) for Disabled Volunteer Soldiers, and the Board of Directors of the National Home system began searching for locations across the country to construct facilities. Partly because of the Association's already-established program, a site in Wood (then just outside the Milwaukee city limits) was selected for the first of the purpose-built Homes, and the Association's services and funding were subsequently subsumed by the government initiative.

Edward Townsend Mix, Milwaukee's most prominent architect, was selected to design the new facility. Construction began in 1868, and the Main Building was dedicated on 28 September 1869. The Main Building was designed by Mix in a popular Victorian Gothic style, with tall mansard roofs characteristic of the French Second Empire style. Decorative wood balconies, cast iron ornament, polychromatic roof slates, and metal roof cresting all contributed to the building's eclectic and picturesque design vocabulary. The Main Building was built of load-bearing masonry construction, with walls of Milwaukee "Cream City" brick resting on fieldstone foundations. Wood framing was used to support the floors and roofs. Cast iron columns were used in the dining hall to facilitate the large open space. Interior walls were plastered, typically above a wood wainscot.

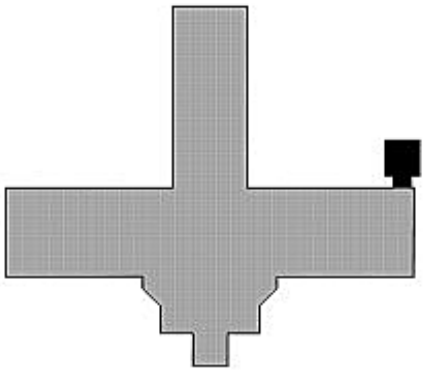
As the National Home's principal building, the Main Building originally contained all of the institution's functions, including office, residential, medical, recreational, and religious facilities. In plan, the Main Building consisted of a prominent four-story (later five) central pavilion, generally housing administrative functions. Three-story symmetrical wings extending to the north and south consisted of central corridor on each floor, flanked by residential wards. A two-story wing to the west contained the dining hall. Laundry and other support services occupied the basement. The building's most prominent feature was its 113'-tall, eight-story tower at the main entrance, at the time the tallest structure in the state.

Despite its monumental size, almost from the beginning the Main Building was too small for the demands of caring for the region's veterans. In 1875-76 four corner towers, part of Mix's original design but omitted for financial reasons, were constructed, along with an addition to the dining hall. The dining hall was further expanded in 1889, and a new kitchen wing constructed, under the direction of the architect Henry C. Koch. During this time period, as well, a number of functions were moved out of the Main Building and into new purpose-built structures, including a hospital, a chapel, and a library (all designed by Koch), thus freeing up additional domiciliary space. The last major addition to the Main Building occurred in 1937, when the earlier kitchen wing was demolished and a new, larger kitchen wing constructed in the same location. The Main Building continued in use as a residential and treatment facility for veterans until the mid-1980s, when it was closed. The National Home for Disabled Volunteer Soldiers in Milwaukee was designated a National Historic Landmark in 2010.

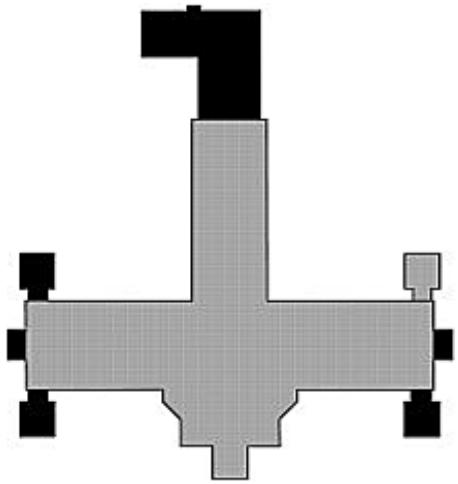
The documentation of the National Home for Disabled Volunteer Soldiers was undertaken by the Historic American Buildings Survey (HABS) of the Heritage Documentation Programs division of the National Park Service, Richard O'Connor, Chief. The project was sponsored by the Department of Veterans Affairs, Office of Construction and Facilities Management, Kathleen Schamel, Federal Preservation Officer. Project planning was coordinated by Catherine Lavoie, Chief, HABS; and by John F. Beetcheben, Executive Assistant to the Director, Clement J. Zablocki Veterans Affairs Medical Center (ZVAMC). The field work was undertaken and the measured drawings were produced by Project Supervisor Mark Schara AIA, HABS Architect; by HABS Architects Paul Davidson, Anne E. Kirkl, and Jason McNatt; and by Architects Daniel De Sousa (Connecticut College) and Alexander Matson (Kent State University). The historical report was written by HABS Historian Lisa P. Davidson. The large format photography was undertaken by HABS Photographer James W. Rosenthal. Assistance was provided by Robert H. Beller, Director, ZVAMC; and by the ZVAMC facilities maintenance staff.

MAIN BUILDING: PLAN DEVELOPMENT

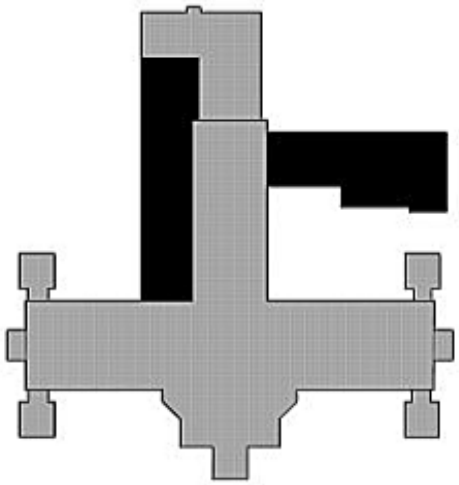
1869
Original building
Architect: Edward Townsend Mix



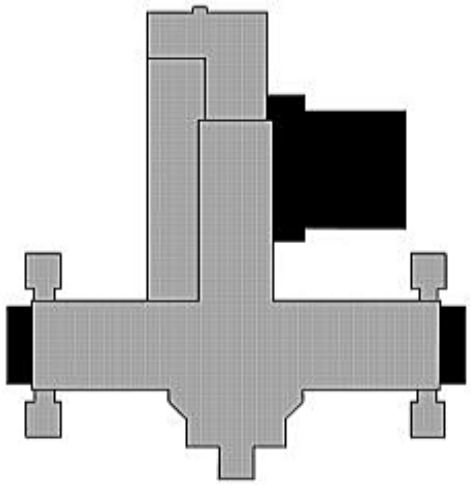
1875
Northwest tower
Architect: Edward Townsend Mix



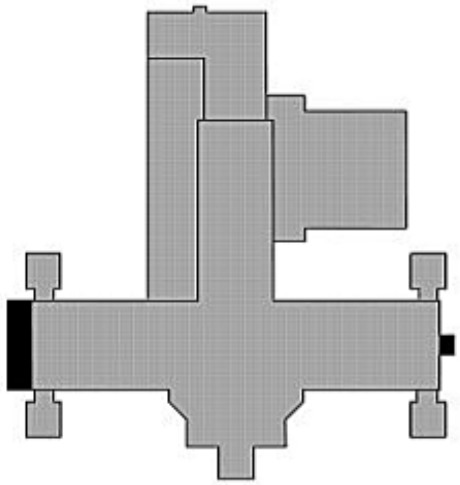
1876
Northeast, southeast, and southwest towers
Addition to west end of dining hall
Addition of gable end porches (?)
Architect: Edward Townsend Mix



1889
Dining hall addition
Addition of new kitchen wing (?)
Architect: H. C. Koch and Company



1937
New kitchen addition
Replacement of gable end porches (?)
Architect: Veterans Administration (?)



circa 1960 (?)
Removal of porches and construction of new entry pavilions at basement level
Architect: Unknown

NATIONAL HOME FOR DISABLED VOLUNTEER SOLDIERS • MAIN BUILDING

Appendix B:
Arnold & O'Sheridan Structural System Assessment

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Structural System Assessment

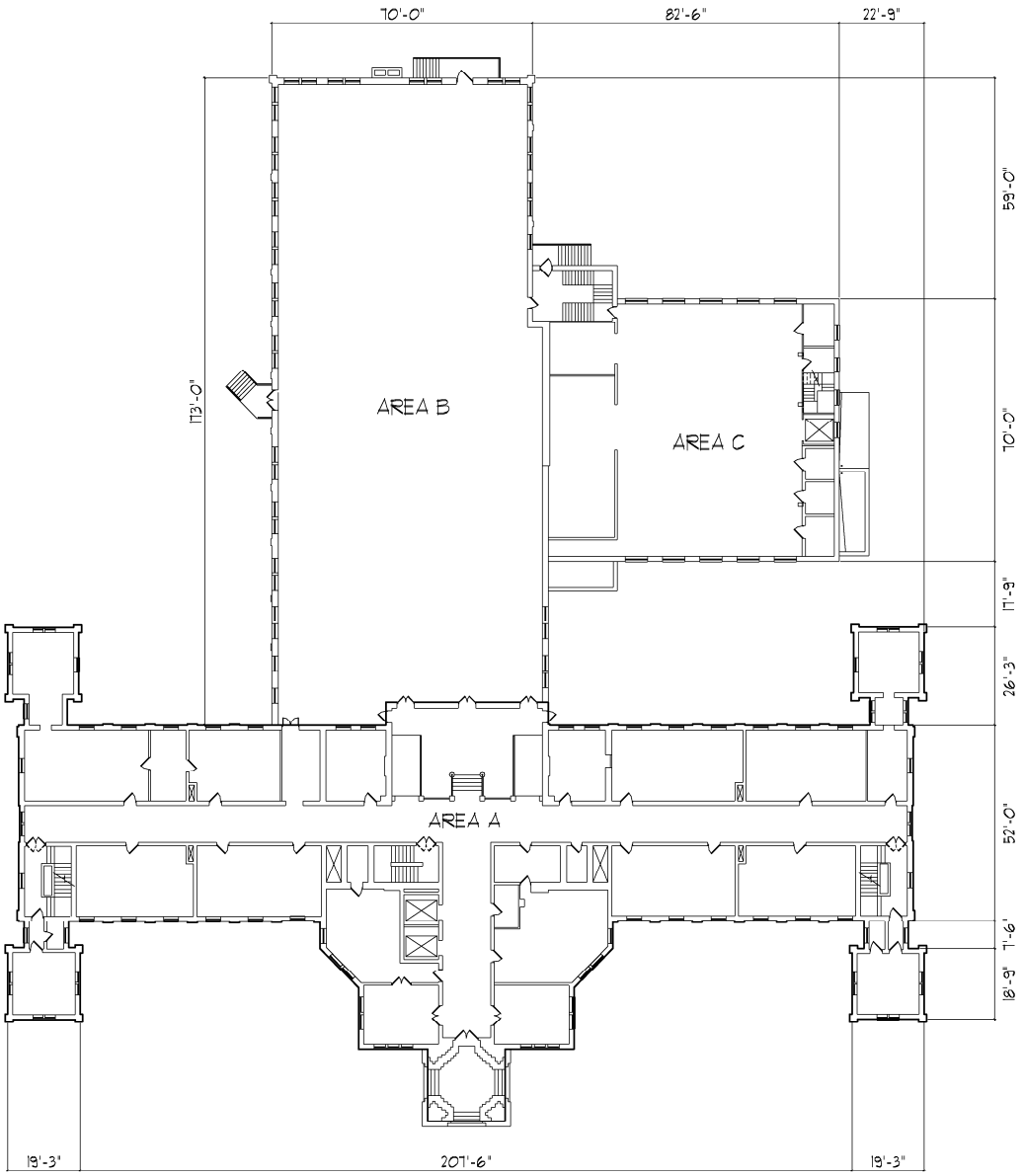
Overview

September 7, 2012
BUILDING #2 – "OLD MAIN"
Structural System Assessment

This structural system assessment is part of a larger study initiated by the Clement J. Zablocki VA Medical Center that is intended to document the current condition of the Domiciliary, otherwise known as "Old Main", and lay the groundwork for the repairs necessary to accommodate long term preservation and/or adaptive reuse.

This assessment is based only on information obtained by observation and exploration of the building, and does not include structural calculations of the load carrying capacity of any building member or component. Further, this assessment does not deal with the major structural deficiencies that currently exist in the first and second floor roof framing, as the repair of both of those areas is part of a project that is currently underway. Exclusive of those deficiencies, and with due consideration for both the age and the general disrepair of the building, the underlying structure of the Domiciliary is in good condition.

The building consists of three distinct areas, each of which was constructed at a different time, and each of which has a somewhat different structural support system. It is important to note that, without exception, every structural failure or deficiency observed is a direct result of the failure of the building envelope, and the subsequent gross infiltration of moisture to the interior of the building. This envelope failure has been underway for a significant period of time, and is systemic in nature, involving all major elements of the building, including roofing systems, drainage and guttering systems, windows and window frames, doors, and the exterior masonry walls. It should be understood that the repair or replacement of any structural element must be accompanied by a similar repair or replacement of that portion of the adjacent building envelope that initially failed, without which any structural repair will undergo continuing deterioration. It must be further understood that deterioration of a structural element caused by moisture penetration may not be readily visible until it has progressed to such an advanced state that it has seriously degraded the ability of the structure to carry load. Therefore, repairs beyond the scope described herein should be anticipated as various portions of the building are opened for repair.



Overall Map of Building #2 showing areas referenced in subsequent photos and observations

Exterior Overall:

Picture #1:

The condition of area-wells around areas A, B and C of Building #2 is generally poor. Picture #1 is representative of the condition of window wells on the south face of Area B. The brick walls are cracked and failing in many locations. The concrete cap is cracked and deteriorated. The condition of foundation drainage at the bottom of the wells is unknown. The windows themselves are in poor condition and are likely allowing moisture from rain and snow to penetrate into the basement.

Picture #2 shows the condition of an area-well at the south-east corner of the courtyard between Areas A and C. The condition of the retaining walls is poor and the presence of moss and vegetation suggests high levels of moisture.

Picture #2:

Overall, we would estimate that 30% to 35% of the area-wells will require reconstruction of brick and/or replacement of concrete caps that are cracked. Around the entire perimeter of Areas A, B and C, site grading and management of water from roof collection systems is poor. Reconstruction of the area-well walls and site grading issues should be addressed in order to keep water out of the basement before the building is suitable for long-term preservation.

Picture #3 shows the condition of an exterior stair that provides access to the basement. The stair is located at the north-west corner of Area B. There is also an upper platform that provides access to the floor above. All of the structural elements are in poor condition. It can be seen that the retaining wall has failed, as well as the concrete cap and much of the concrete structure above. This area is unusable and not safe; it should be rebuilt before the building is suitable for long-term preservation. The foundation drainage system needs to be assessed and repaired at locations like this to ensure that water is not entering the basement.

Picture #3:

Condition of other stairs around the perimeter of Building #2 is similar, though not quite as bad. Picture #4 shows a concrete stair structure located in the south-west corner of Area C. Spalling of the concrete has occurred, likely due to the deterioration of the rebar. Despite the deterioration, this stair is still safe for incidental use. Repairs aren't necessary unless the building is being considered for adaptive reuse.

Picture #4:

Picture #5:

Picture #5 shows a wooden ramp that was constructed over top of an existing metal access stair at the south-east corner of the courtyard between Areas A and C. The ramp may have been constructed to allow for wheelchair access to the building, as the only other ramp access that remains is located within the enclosure at the south entrance to the basement of Area A. The condition of the wooden ramp is poor. We recommend that this structure be removed prior to long-term preservation. Access requirements will certainly have to be updated per the current building code if adapt reuse takes place, and ramp requirements can be addressed at that time.

Picture #6:

The original steel stair structure under the wooden ramp should be inspected for deterioration. We recommend that fasteners and attachments to the building be inspected and repaired as necessary to maintain the overall structural integrity. This should be completed prior to long-term preservation. Scraping and repainting of any badly rusted components should be considered, although if the building progresses to adaptive reuse, more extensive repairs will likely be required as part of the upgrade. The need for a more thorough job of scraping and repainting could be considered at that time.

Picture #6 is taken at the north-west corner of the loading dock in Area C. Significant deterioration of the concrete and steel edge guard can be seen. Deterioration of the concrete under what appear to be cast iron columns is so bad that the cantilevering action of the slab might be the only factor preventing the roof structure above from collapsing. This condition requires attention at the highest priority. Not seen in the picture, the steel handrails also require attention; the connection between one of the handrails and what appears to be a cast-iron column has failed. The handrail was welded to the column and observation shows that the wall of the column has failed at the weld location.

Picture #7:

The stone foundation walls are generally in good condition although they require repointing (or possible stone removal and replacement) in isolated locations – less than 1% of the total area. Pictures #7 and #8 show locations where the mortar is darkened in color and deteriorated or missing. In an attempt to prevent water infiltration to the basement and maintain overall structural integrity, repair of these conditions should be completed before the building is suitable for long-term preservation.

Picture #8:

Picture #9:

Picture #10:

Picture #11:

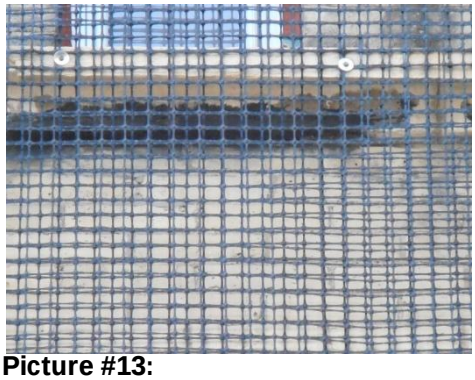
Picture #12:

There are isolated areas where the exterior brick shows significant structural cracking or some other form of deterioration that requires removal and replacement. Overall, the percentage of brick requiring these repairs is less than 1%.

Pictures #9, #10, #11 and #12 demonstrate that sections of failing brick occur most commonly in areas that are subject to gross water exposure. Picture #9 is taken at the north-west corner of Area C. Picture #10 shows the high roof at the south-east corner of the courtyard between Areas A and C. Picture #11 shows the southeast corner of Area C. Picture #12 is the high roof on the south side of Area B (above the Area C addition). Constant exposure to water, in conjunction with the repeated freeze-thaw cycles that are typical in this area of the country, leads to spalling of the face of the brick.

Brick in all four locations is deteriorated to the extent that removal and replacement will be necessary. It should be restated that any structural repairs will continue to deteriorate unless the issues with gross water exposure are addressed. This includes inspection and maintenance of all gutters and downspouts and repair of building envelope deterioration at the top of the brick walls. Repairs described in this section should all be completed prior to long-term preservation.

It should be noted that while the brick is in relatively good condition, the stone window sills in Area A generally are in very poor condition. While this is not shown in the pictures, we would estimate that 20% to 25% of the stone sills in this area are badly deteriorated. Although badly deteriorated, the sills are still directing water outward and functioning to prevent gross water infiltration; thus we don't think it is necessary to fix them or replace them before long-term preservation.



Picture #13:

Black plastic netting has been fastened to the central tower of Building #2. This can be seen in Picture #13. Date and exact purpose for installation of the netting is unknown, although we assume it was installed to protect maintenance workers and the general public from deteriorated portions of the building façade falling to the ground. The picture shows a darkened area on the sills underneath the window. Close-up examination of this condition (although in a different area) suggests the darkened area is a staining on the stone and not gross deterioration as it appears in the picture. We recommend that these areas be inspected and necessary repairs be completed to prevent deterioration from water infiltration. This should be done prior to long-term preservation.

Picture #14:

Picture #14 shows the base of columns at the covered front entry. The columns, column bases and capitals all appear to be cast-iron. They are supporting incidental brick and decorative materials above; we do not think these elements are load-bearing as far as supporting the massive brick walls above. The brick arches themselves appear to provide the structural support for this purpose. The cast iron elements appear to be in good condition, except for the painted finish.

Picture #15 shows decorative arches above more of the cast-iron columns and capitals. While the arches are painted the same color as the cast-iron columns, they are constructed from wood. They appear to be in good condition as they are largely protected from rain and snow under the covered porch.

Picture #15:

Picture #16 shows the floor of the covered entry porch. The tile flooring is in poor condition but should be acceptable for incidental use and long-term preservation. An inspection in the basement suggests that the porch floor was placed on grade; there is no basement below. The components described in Pictures 14 – 16 require no repairs prior to long-term preservation.

Picture #16:

Area A:

Picture #18:

Picture #18 shows the roof structure of the single-story covered entry area that provides access to the basement at the south end of Area A. The covered entry area was an addition to the original 1867 structure, although the exact date for the addition is not known. The roof structure appears to be precast concrete roof panels supported by steel framing. The steel framing shows signs of deterioration, particularly where the steel columns bear on a partial-height concrete wall (Picture #19). In order to ensure the integrity of this structure during long-term preservation, it would be important to inspect the members and connections for signs of deterioration, repair or replace damaged components and then protect the bare steel with a paint finish or other protective coating. As with all other areas of the building, it is important to inspect and maintain the roof drainage and all other building envelope components to ensure that the cause of the deterioration does not continue.

Picture #18:

BASEMENT SUMMARY:

In general, the structural components present in the basement are concealed; this includes mainly stone foundation walls and the wood floor structure above. Based on limited areas where the structural elements are visible, and as inferred from the evidence available, we can say that structural components are likely in fair to good condition.

Picture #19:

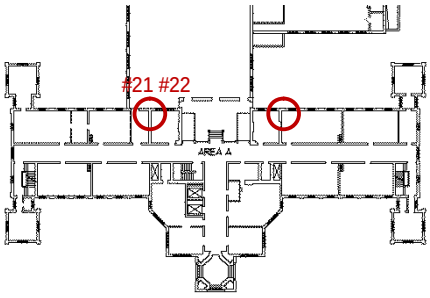
Pictures #19 and #20 are taken in the basement and show signs of water infiltration; this is common. However, the pictures and other evidence observed in these areas do not suggest any significant underlying structural damage to the stone foundation walls. It is expected that a full destructive inspection may reveal miscellaneous structural defects – in varying degrees – but we expect them to be mostly minor issues such as repointing.

In order to secure the building for long-term preservation, we recommend that all the building envelope issues that are mentioned elsewhere in this document and in the Architect's report be addressed. Also we recommend that all site drainage issues be addressed. With envelope and drainage issues addressed, we expect active deterioration in the basement to lessen or cease altogether.

Picture #20:

Picture #21:

Picture #22:



Picture #23:

Picture #24:

FIRST FLOOR SUMMARY:

Similar to the basement, most of the structural components within the first floor are concealed. This includes primarily the wood stud walls, wood floor joists and the interior and exterior brick load-bearing walls.

Again, based on limited areas where the structural components are visible, and as can be inferred from the evidence available, we can say that the majority of the structural components within the first floor appear to be in good condition.

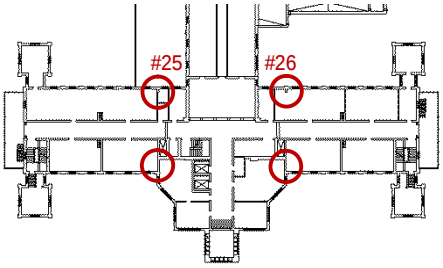
In general (excluding the items that are specifically discussed below), there are few visible signs of deterioration that can be seen from within the rooms. Many of the rooms have peeling paint but otherwise show no obvious signs of distress in the floor structure or bearing walls. It must be restated that, the majority of the structural components are concealed from view, and it is always possible that damage exists that cannot be observed. An example of an unknown condition is the typical 3"x12" wood floor joists where they bear on the perimeter brick wall. There are no visible signs of deterioration from the inside or the outside. However, there should be some expectation that damage may be present but concealed from view.

Pictures #21 and #22 show isolated areas where damage to the floor structure above the first floor is visible (Picture #23 indicates the location of the photos). In general, the plaster is damaged more than the floor framing components in these areas. At most, two to three of the existing joists at each location may require repair or replacement. The cause of the damage is water infiltration. Because these conditions are adjacent to the exterior brick wall, one might assume there are nearby envelope issues. However, the water is not coming through the exterior brick wall at these elevations. The water is likely coming from higher floors. Both areas circled in Picture #23 have the same damage. It will be discussed at length in the sections that follow for the other floors, but the water appears to be entering two floors above where the nearly-flat upper section of the mansard roof (above floor three) joins with the top of the brick wall where it transitions to the upper mansard roof. This area of the roof is shown in Picture #32.

Additionally, there is an area of severe deterioration at the north end of Area A concentrated at the main corridor and around the stairway. Deteriorated plaster is evident, in some cases down to the brick load-bearing walls, as shown in Picture #24. Mold and dampness are prevalent. The damage to this area of the building was caused by a roof leak at the top of the stairway; this will be discussed at length in the sections that follow for the higher floors. This damage is the most significant area of deterioration on the first floor. Beyond what can currently be viewed, we expect further damage to be present within the concealed areas of framing. Detailed recommendations for necessary repairs to this area are beyond the scope of this document. Fixing the roof leak to prevent further water infiltration is most critical to prevent the condition from worsening.

Picture #25:

Picture #26:



Picture #27:

SECOND FLOOR SUMMARY:

Damage to structural components within the second floor is similar to what was described for the first floor – except that the intensity of the deterioration is much worse. This makes sense because the most severe damage (described in the section that follows) is caused by water infiltration on the flat part of the mansard roof, which is now only one floor above.

As with the first floor, it must be stated that the majority of the second floor is in fair to good condition, with few obvious signs of distress to structural components. However, most structural components are concealed, and conclusions are drawn from available evidence. Further, it is possible and even likely that damage exists that cannot be observed.

Pictures #25 and #26 show areas of isolated damage to the floor structure above due to water infiltration. Locations for this isolated damage are indicated in Picture #27. Additional areas of similar concentrated damage are also shown in Picture #27. Again, the source of this damage is the nearly-flat upper section of the mansard roof (above floor three) where it joins with the top of the brick wall where it transitions to the upper mansard roof (see Picture #32).

Note that the locations outlined in Picture #23 coincide with areas of deterioration on the floor above. Is should also be noted that severity of deterioration is worsening as we get closer to the source of water infiltration. In addition, being one floor higher, there are two additional areas of similar deterioration.

Exact damage to floor framing and wall studs in these areas is unknown, but it is to be expected that removal of components and replacement will be necessary in order to ensure the integrity of the building during long-term preservation. Even more important, though, is to repair the envelope failures that are allowing water to enter the building.

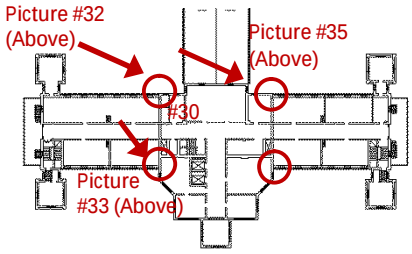
As stated for the first floor, there is an area of severe deterioration at the north end of the main corridor concentrated around the stairway. Massive amounts of deteriorated plaster are evident, and although much of the structural elements are concealed, there is sure to be a considerable amount of damage. The source is a roof leak in the stairway one floor up. Detailed recommendations for repairs to this area are beyond the scope of this report. Fixing the roof leak to prevent further water infiltration is most critical to prevent the condition from worsening.

The second floor room that occupies the footprint of the central tower has a floor that is very bouncy and generally demonstrates poor vibration performance. This is a condition that is not evident in other areas of the second floor, despite the fact that all floors were likely framed with similar materials and similar construction methods. The room is roughly 16' to 18' square and the spans are not outside the capabilities of the joists used elsewhere in the building. We recommend that the framing

Picture #28:

Picture #29:

Picture #30:



Picture #31:

be investigated from the underside to determine if this warrants additional attention. This doesn't need to be completed before long-term preservation, but should be completed before the building is once again opened to the public.

THIRD FLOOR SUMMARY:

As with the other floors (and exclusive of the exceptions that follow), it should be stated that the majority of the third floor is in fair to good condition, with few obvious signs of distress to structural components. However, many of the structural components are concealed, and conclusions are drawn from available evidence. Further, it is possible and even likely that damage exists that cannot be observed.

The third floor consists of a central portion that is enclosed by brick load-bearing walls and then a north wing and a south wing that are each enclosed by the mansard roof structure. This can be seen clearly in the photos on the first page of this document. The mansard roofs over the north and south wings – and the intersection between these roofs and the central brick portion – are the primary sources of water infiltration and all associated damage to Area A of Building #2.

There are many small leaks in the flat portions of the mansard roof above the third floor north and south wings. One such leak is shown in Picture #28 (taken from the shallow attic area beneath) with associated damage to the roof decking and framing below. The damage is minimal, however, primarily because the water is able to drip freely to the ceiling structure which is 3' to 4' below. Thus, much of the damage is sustained in the lathe and plaster – an example of which can be seen in Picture #29.

Picture #30 shows an area of isolated damage to the roof structure above the third floor – although it is more difficult to see the damage because of the metal panel ceiling. The location is identified on Picture #31. Picture #31 also shows other areas of isolated damage that coincide with the damage that was seen on the floors below.

Picture #32:

Picture #33:

Picture #34:

Picture #35:

There are two causes of the gross water infiltration that is causing the damage outlined on Pictures #23, #27 and #31.

The first cause, that has been mentioned earlier, is a massive failure of the flashing and gutter/downspout system where the mansard above the third floor north and south wings joins to the top of the brick walls at the central core area. One such area is shown and pointed out in Picture #32 (location shown on #31).

Picture #33, although it is taken of a similar condition on the east side of this same roof, demonstrates the lack of proper roofing and flashing in the area where multiple sections of the roofing converge and turn down into a roof conductor.

Picture #34 is taken inside one of the roof conductors, where it can be seen that large gaps in the conductor are allowing water to penetrate into the framing below. Exact damage to the framing in these areas is unknown, but it is to be expected that significant removal and replacement will be necessary in order to ensure the integrity of the building during long-term preservation.

The general condition described in #32, #33 and #34 (actually occurring in four locations) is the primary cause of the gross water infiltration that has been described above. The second cause is the drainage trough that can be seen in Picture #35 at the base of the mansard roof. The location of the photo can be seen in #31. In the center of the photo, it can be seen that the rubber-roofed drainage trough terminates where the mansard ends and the brick begins. There is a roof conductor at this location but much of the flashing is badly deteriorated.

Picture #36:

As on the second floor, the third floor room that occupies the footprint of the central tower has a floor that is bouncy and demonstrates poor vibration performance (Picture #36). As with the second floor space, this seems unusual and it is not known if this is a design and construction error or the result of deterioration. We recommend that the framing be investigated from the underside to determine if this warrants additional attention. This doesn't need to be completed before long-term preservation, but should be completed before the building is opened to the public.

Picture #37:

At the north end of the building just off the main corridor, above the stairway, is the source of the water infiltration that caused the most severe damage to the building. The small hole in the roofing is shown from the top side in Picture #37 and from the underside (within the stairway) in Picture #38. A partially successful fix was provided involving a water collection device and a rudimentary drainage basin and drainage system that exited through one of the third floor windows. It is not known if the system is still functioning, although there was still water in the basin.

Picture #38:

Picture #39 shows the typical condition of the lower flashing at each of the four corner towers. Picture #40 shows the condition from the inside of one of the towers. The flashing and roofing need to be repaired to make the structure weather-tight and to eliminate the pigeons that are living in the towers. Significant deterioration to the wood framing was not noted and replacement of wood members will not likely be necessary If the problem is addressed soon.

Picture #39:

Picture #40:

Picture #41 shows the framing and wooden ladder that is typical inside each of the towers.

FOURTH FLOOR SUMMARY:

As with the other floors, the majority of the fourth floor is in fair to good condition, with few obvious signs of distress to structural components. However, many of the structural components are concealed, and conclusions are drawn from available evidence. Further, it is possible and even likely that damage exists that cannot be observed.

The fourth floor consists only of a central portion wrapped on four sides with the upper mansard roof. Signs of gross structural damage were not noted on the fourth floor

Picture #41:

UPPER FOURTH FLOOR SUMMARY:

There is a partial upper floor that could be called the fifth floor within the upper portion of the upper mansard roof. Most of the structural components are concealed; however, many signs of the leaking roof above this space are evident. Most notably, this damage is evident in the framing around the skylights present at this level. A good example of this can be seen in Picture #42 where the deteriorated wood framing around a large skylight opening can be seen. It was also noted from the top side of this roof that gross de-lamination of the roofing membrane was occurring approximately 12" back from the perimeter of the flat roof.

Picture #42:

CENTRAL TOWER SUMMARY:

The central tower is in fair condition. Both the brick portion that extends up to the base of the mansard roof and the mansard roof itself show no signs of significant structural distress. As shown in Picture #43, many of the windows have broken or missing panes of glass. These should be repaired, although it appears that the black protective netting may be keeping the pigeons out for the time being. The floor in some areas appears to be spongy, possibly because of the water infiltration, but otherwise the wood structural components appear to be in fair condition.

Picture #43:

Area B:

Picture #44:

Picture #45:

Picture #46:

Picture #47:

Area B in Building #2, otherwise known as the Dining Hall, is a two story structure above a basement level. Roof levels consist of wood truss framing spanning between exterior bearing walls, which in some cases are supported on steel beams and cast-iron columns.

This portion of the building has experienced several instances of structural collapse at both the first and second floor. These collapses were caused directly by the systemic and long term failure of the exterior building envelope, including roofing, flashing and masonry walls. This failure exposed the load carrying wood structure to gross moisture damage. Over time the wood has rotted to the point where it is no longer capable of carrying the necessary load. The result is evident in Picture #44 and Picture #45.

It is important to note that the collapse of these portions of the roof has opened the building to further moisture damage. Picture #46 shows the pond that currently exists in the basement level below the first floor collapse as a result of water leaking through the first floor structure. It is to be expected that new damage to both the first and second floor structures beneath the collapsed areas is currently underway, but the extent of that damage cannot be evaluated until the areas of the structure open to the weather have been repaired and the building has an opportunity to dry out. At that point we recommend exploration of the structure beneath both the first and second floor collapses to determine the extent of the damage. This will involve removal of both suspended ceilings and plaster ceilings to expose the structure for observation and damage evaluation.

A repair project is currently underway that directly addresses the currently collapsed portions of Area B. However, there are additional portions of Area B that are experiencing structural distress.

Pictures #47 and #48 show the condition at the east and west sides of the westernmost portion of the second floor roof. Both these pictures show an on-going failure of the brick masonry wall at the rafter/brick wall connection. The interior wythe of the brick wall is cracked along most of the 30' length of the wall, and the portion of the wall immediately above the crack and below the sill for rafter bearing is rotating outward. This support failure is causing the ridge rafter to sag, and will eventually result in a partial roof collapse. In typical roof construction, the outward thrust of the shallow ridge rafters is resisted by a tension member. In this case, that member is located almost 12" below the bearing point. The connection between the rafter and the tie is at such a steep angle that it is not providing the necessary lateral resistance. The problem is made worse by the deterioration of the roof, and subsequent water infiltration – daylight can be clearly seen in Picture #47.

To completely repair this area it will be necessary to remove and replace significant portions of the roof deck, move the rafters back

Picture #48:

Picture #49:

Picture #50:

Picture #51:

into their proper position, remove and repair the brick masonry for at least the first two courses below the sill, repairing the sill as required, and providing functioning tension ties for at least every other rafter set. This repair work will be necessary for the entire 30' length of the upper roof. If historic preservation considerations will permit, an alternative repair is to simply remove the roof and replace the current rafter-ridge beam system with a modern gang-nail truss system. This will still necessitate a repair of the brick masonry, but may be otherwise less expensive.

Picture #49 shows a rotating and deflecting roof support truss located on grid line 12. This is the eastern most truss in the first floor roof structure. Because of peculiarities of the roof framing, this truss carries 20-25% more load than the rest of the trusses at this level, though all trusses appear to be constructed identically. There is no readily apparent sign of moisture deterioration, though much of the bottom chord of the truss is concealed, and the connection at the exterior wall cannot be readily explored. However, this truss has clearly sagged to a substantially greater degree than any of the others, and has rotated significantly at the interior support. Without repair or replacement it is likely that this truss will eventually fail, particularly under a heavy wet snow load. We estimate that the repair/replacement of this element would involve the shoring or replacement of almost 1000 square feet of roof area

Picture #50 shows rotted and deteriorated framing associated with the skylight framing, located just east of the truss noted above. While much of the skylight framing is in acceptable condition, the south end at the exterior wall has undergone considerable deterioration from water penetration through the roof, and around the skylight system. Framing in this area will need to be replaced. We estimate that approximately 150 square feet of roofing and roof framing will require replacement.

Picture #51 shows cracking and heaving that has shown up in the basement level slab within the past year. We attribute this to the lack of heat and subsequent freezing in the basement area, and the excessive moisture to which the building has been subjected over the last two years. We estimate that there are currently 50 linear feet of crack that should be routed out and grouted. However, as Picture #42 clearly shows, the presence of gross quantities of water in the building at the present time, and the inevitable saturation of soil sub-grade through cracks in the flooring and at the floor wall juncture may well increase the quantity of crack repairs significantly.

Area C:

Picture #52:

Picture #53:

Picture #54:

Picture #55:

Area C in Building #2 (loading dock and kitchen) is the most recently constructed part of the building, and consists of a single story above a basement level. Roof level is a concrete flat slab spanning between steel purlins. These elements sit on long span steel trusses, which also support the plaster ceiling support beams, creating an interstitial space approximately 60" deep, and providing a column free space below. Roof slope is provided by sloping truss top chords. Pictures #52 and #53 show the roof construction. There is no sign of rust, corrosion or other deterioration of the steel supporting structure. Trusses sit on concrete columns, which run to the foundations below.

The perimeter walls are load bearing brick, supported on the north and south sides by a concrete beam spanning between exterior walls and interior columns, as shown in Picture #54. The first floor is supported by a cast-in-place concrete pan joist system shown in Picture #55, spanning between concrete girders which are in turn supported on concrete columns. The concrete structure appears to be in good condition, with no visible spalls, reinforcing steel exposure or corrosion/rust. Given the exposure to ambient moisture clearly evident in many areas of the basement level and first floors, and the condition of the structure visible in these photos, we believe it is likely that the structure throughout will be in a similar condition.

Repairs in the interior of this area of the building are expected to be limited to incidental small areas that may require concrete patching, and some very limited brick replacement.